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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/738,377	12/13/2003	Joshua S. Auerbach	YOR920030630US1	7277

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EXAMINER	
PHAM, MICHAEL	
ART UNIT	**PAPER NUMBER**
2167	

DATE MAILED: 07/25/2006

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No.	Applicant(s)	
	10/738,377	AUERBACH, JOSHUA S.	
	Examiner	Art Unit	
	Michael D. Pham	2167	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☐ Responsive to communication(s) filed on *13 December 2003*.

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-23* is/are pending in the application.

4a) Of the above claim(s) _____ is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-3,5,10-15 and 21-23* is/are rejected.

7)☐ Claim(s) *4, 6-9, and 16-20* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).

11)☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

Priority under 35 U.S.C. § 119

12)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____.

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

Attachment(s)

1) ☒ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) Paper No(s)/Mail Date _____.
4) ☐ Interview Summary (PTO-413) Paper No(s)/Mail Date. _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: _____.

Detailed Action

1. Claims 1 - 23 have been examined.

2. Claims 1 - 23 are pending.

3. Claims 1 - 23 are rejected as detailed below.

Priority

No domestic or foreign priority has been claimed in this application. Accordingly, the application has been examined with an effective filing date of 12/13/2003.

Claim Objections

Claims 2-11 are objected to for minor informality. Although the dependent claims that begins with "A method" as recited in claim.." refers back to the claim from which it depends by stating "as recited in claim ..", the use of "A method" essentially makes the dependant claim separate and new and thus does not necessarily depend from the independent claims. Rather it appears what is being done is obtaining an independent claim in the form of a dependant claim.

Claims 15-22 are objected to for minor informality. Although the dependent claims that begin with "An apparatus" as recited in claim.." refers back to the claim from which it depends by stating "as recited in claim ..", the use of "An apparatus" essentially makes the dependant claim separate and new and thus does not necessarily depend from the independent claims. Rather it appears what is being done is obtaining an independent claim in the form of a dependant claim.

Claim Rejections – 35 USC § 101

35 U.S.C. 101 reads as follows:

> Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 12, 13, and 23 are rejected under 35 U.S.C. 101 because the claimed invention is directed to non-statutory subject matter. The claimed subject appears to be reasonably interpreted by one of ordinary skill in light of the disclosure as software, such that the article of manufacture, computer program product, and program storage device directed to software per se.

Claim Rejections - 35 USC § 112

The following is a quotation of the second paragraph of 35 U.S.C. 112:

> The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 2-11and 15-22 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claim 2-11 recites the limitation "A method" in as the first few words of the claims. There is insufficient antecedent basis for this limitation in the claim.

Claim 15-22 recites the limitation "An apparatus" in as the first few words of the claims. There is insufficient antecedent basis for this limitation in the claim.

Claim Rejections - 35 USC § 103

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

> (a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negatived by the manner in which the invention was made.

Claims 1-2, 11, 12-14, and 22-23 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2005/0091576 by Relyea et. al. (hereafter Relyea) further in view of U.S. Patent 6459393 by Nordman (hereafter Nordman).

Claim 1:

A method comprising organizing a byte stream of an information structure, said information structure having a schema and an in-memory representation, said schema having a schema tree representation with a plurality of schema nodes, said schema nodes including at least one leaf and at least one interior node, the step of organizing comprising the steps of:

Reyla discloses,

computing a layout from the schema tree representation depth first [1]enumeration of leaf nodes of the schema [Relya, 0396, provides a parser with hierarchy of objects from or to an XML file or a file with a binary representation.];

serializing the byte stream from the in-memory representation while grouping together all scalar items from the in-memory representation to each schema node [Relya,

0396, Serialization is a process of taking a live, in-memory representation of objects, and producing a stream of data sutable for saving to a strorage device. 0398, Serialization and deserialization support the full range of XAML features including: standard syntax, compound properties compact compound syntax, implicit child syntax, explicit children syntax, collection syntax with explicit collection tag.]; and

However, Relya does not explicitly disclose **accessing information from the byte stream by using the layout and offset calculations**. On the other hand, Nordman discloses Col. 4 lines 31-35, locating the framing bytes and using a calculated offset, each and every byte of information within the frame can be quickly and accurately identified according to the promulgated standard. All systems are directed to data communication. It would have been obvious to one of ordinary skill at the time the invention was made to have modified Relya to have included the steps of accessing information from the byte stream using the layout and offset calculations based on the disclosure Nordman. A skilled artisan would have been motivated to do so because it would enable Relya's system to quickly and accurately identify information from the byte stream.

Claim 2:

A method as recited in claim 1, wherein said information structure is a message

[Relya, 0014, provides functions for generating applications, documents, etc. Functions allow developers to obtain services. That is, a message is necessitated in order to generate documents

[1] Depth first ordering is a well known tree traversal ordering by one of ordinary skill.

and obtain services.].

Claim 12:

An article of manufacture comprising a computer usable medium having computer readable program code means embodied therein for causing organization of a byte stream of an information structure, the computer readable program code means in said article of manufacture comprising computer readable program code means for causing a computer to effect the steps of claim 1 [Relya, 0499-522, describes a computing system and environment].

Claim 13:

A program storage device readable by machine, tangibly embodying a program of instructions executable by the machine to perform method steps for organizing a byte stream form of an information structure, said method steps comprising the steps of claim 1[Relya, 0499-522, describes a computing system and environment].

Claim 14:

An apparatus comprising a serializer/deseralizer for a byte stream form of an information structure, said information structure having a schema and an in-memory representation, said schema having a schema tree representation with a plurality of schema nodes, said schema nodes including at least one leaf and at least one interior node, the serializer/deserializer comprising:

Reyla discloses,

a processor for computing a layout from the schema tree representation by depth-first enumeration of leaf nodes of the schema [Relya, 0396, provides a parser with hierarchy of objects from or to an XML file or a file with a binary representation.];

a serializer for serializing the byte stream from the in-memory representation while grouping together all scalar items from the in-memory representation corresponding to each schema node [Relya, 0396, Serialization is a process of taking a live, in-memory representation of objects, and producing a stream of data sutable for saving to a strorage device. 0398, Serialization and deserialization support the full range of XAML features including: standard syntax, compound properties compact compound syntax, implicit child syntax, explicit children syntax, collection syntax with explicit collection tag.]; and

However, Relya does not explicitly disclose **a selective de-serializer for accessing information from the byte stream by using the layout and offset calculations**. On the other hand, Nordman discloses Col. 4 lines 31-35, locating the framing bytes and using a calculated offset, each and every byte of information within the frame can be quickly and accurately identified according to the promulgated standard. All systems are directed to data communication. It would have been obvious to one of ordinary skill at the time the invention was made to have modified Relya to have included the steps of accessing information from the byte stream using the layout and offset calculations based on the disclosure of Nordman. A skilled artisan would have been motivated to do so because it would enable Relya's system to quickly and accurately identify the information from the byte stream.

Claim 11:

A method as recited in claim 1, further comprising performing a preliminary reorganization of the schema to distribute tuples over variants prior to carrying out the steps of computing, serializing and accessing [Relya, 0357, Design namespace 320 provides a flexible and extensible approach to organizing various functionality.].

Claim 22:

An apparatus as recited in claim 14, wherein a preliminary reorganization of the schema is performed to distribute tuples over variants prior to carrying out the remaining steps [Relya, 0357, Design namespace 320 provides a flexible and extensible approach to organizing various functionality.].

Claim 23:

A computer program product comprising a computer usable medium having computer readable program code means embodied therein for causing organization of a byte stream form of an information structure, the computer readable program code means in said computer program product comprising computer readable program code means for causing a computer to effect the functions of claim 14 [Relya, 0499-522, describes a computing system and environment].

Claims 3, 5, 10, 15, and 21 are rejected under 35 U.S.C. 103(a) as being unpatentable over U.S. Patent Application Publication 2005/0091576 by Relyea et. al. (hereafter Relyea) and U.S. Patent 6459393 by Nordman (hereafter Nordman) further in view of the Background of the Application (hereafter Background).

Claim 3:

A method as recited in claim 1, wherein the step of computing a layout comprises:

Relya and Nordman do not explicitly disclose **establishing a fixed length portion of the byte stream, the fixed length portion having a slot for each enumerated schema leaf node and establishing a varying length portion of the byte stream following the fixed length portion, the varying length portion having successive areas for any information items requiring varying length encoding**. On the other hand, the background discloses that 0004, flat structure maybe characterized as a tuple. The schema for such an information structure calls for a fixed sequence of fields. Further disclosing that 0012 varying length requires some pointer indirection in order that all offsets are still known. It is well-known that a pointer to elsewhere in memory can be represented as a stored offset to elsewhere in a byte stream. All systems are directed to serialization systems. It would have been obvious to one of ordinary skill to have modified Relya and Nordman to have included **establishing a fixed length portion of the byte stream, the fixed length portion having a slot for each enumerated schema leaf node and establishing a varying length portion of the byte stream following the fixed length portion, the varying length portion having successive areas for any information items requiring varying length encoding** based on the disclosure of the background. A skilled artisan would

have been motivated to do so for the purpose of accurately describing information structures in general.

Claim 5:

Relya and Nordman do not explicitly disclose wherein interior nodes of said schema tree representation are restricted to list and tuple nodes, and leaf nodes comprise scalar types and dynamic types. On the other hand, the Background, page 2 lines 16-22, discloses that information structures may also include dynamically typed areas in which any kind of information may appear, and further discloses Information structures may be recursive for example, a field of a tuple may be defined as another instance of the tuple itself or of an encompassing tuple or list. All systems are directed to serialization systems. It would have been obvious to one of ordinary skill to have modified Relya and Nordman to have included **wherein interior nodes of said schema tree representation are restricted to list and tuple nodes, and leaf nodes comprise scalar types and dynamic types** based on the disclosure of the background. A skilled artisan would have been motivated to do so for the purpose of accurately describing information structures in general.

Claim 10:

Relya and Nordman do not explicitly **disclose wherein the schema tree representation is derived from a schema graph representation by truncating recursive definitions and variants and replacing truncated sub-trees with leaf nodes of a dynamic type.** On the other hand, the Background, page 2 lines 19-22, discloses that information structures may also include

dynamically typed areas in which any kind of information may appear. Further disclosing that in messaging, the representation is usually a tree structure and serialization of messages is done by recursive descent, which results in storing all tables in row order. All systems are directed to serialization systems. It would have been obvious to one of ordinary skill to have modified Relya and Nordman to have included **wherein the schema tree representation is derived from a schema graph representation by truncating recursive definitions and variants and replacing truncated sub-trees with leaf nodes of a dynamic type** based on the disclosure of the background. A skilled artisan would have been motivated to do so for the purpose of accurately describing information structures in general.

Claim 15:

An apparatus as recited in claim 14, wherein the processor comprises

Relya and Nordman do not explicitly disclose **a module for establishing a fixed length portion of the byte stream, the fixed length portion having a slot for each enumerated schema leaf node and for establishing a varying length portion of the byte stream following the fixed length portion, the varying length portion having successive areas for any information items requiring varying length encoding.** On the other hand, the background discloses that 0004, flat structure maybe characterized as a tuple. The schema for such an information structure calls for a fixed sequence of fields. Further disclosing that 0012 varying length requires some pointer indirection in order that all offsets are still known. It is well-known that a pointer to elsewhere in memory can be represented as a stored offset to elsewhere in a byte

stream. All systems are directed to serialization systems. It would have been obvious to one of ordinary skill to have modified Relya and Nordman to have included **a module for establishing a fixed length portion of the byte stream, the fixed length portion having a slot for each enumerated schema leaf node and for establishing a varying length portion of the byte stream following the fixed length portion, the varying length portion having successive areas for any information items requiring varying length encoding** based on the disclosure of the background. A skilled artisan would have been motivated to do so for the purpose of accurately describing information structures in general.

Claim 21:

Relya and Nordman do not explicitly disclose **wherein the schema tree representation is derived from a schema graph representation by truncating recursive definitions and variants and replacing them with leaf nodes of dynamic type.** On the other hand, the Background, page 2 lines 19-22, discloses that information structures may also include dynamically typed areas in which any kind of information may appear. Futher disclosing that in messaging, the representation is usually a tree structure and serialization of messages is done by recursive descent, which results in storing all tables in row order. All systems are directed to serialization systems. It would have been obvious to one of ordinary skill to have modified Relya and Nordman to have included **wherein the schema tree representation is derived from a schema graph representation by truncating recursive definitions and variants and replacing them with leaf nodes of dynamic type** based on the disclosure of the background. A

skilled artisan would have been motivated to do so for the purpose of accurately describing information structures in general.

Allowable Subject Matter

1. Claims 4, 6-9, and 16-20 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

2. Claim 4 (and similarly claim 16) discloses computation and process of creating a layout by establishing a fixed length portion having a slot for each enumerated schema leaf node having a predecessor in the depth-first numbering requiring varying length encoding; establishing a varying length portion of the byte stream following the fixed length portion, the varying length portion having successive areas for each enumerated schema node. The closest prior art the examiner was able to find after constant searching was the admitted background of the disclosure where the background [pg. 1 lines 21-22 to pg. 2 lines 1-3]discloses that, flat structure maybe characterized as a tuple. The schema for such an information structure calls for a fixed sequence of fields. Further disclosing that [pg. 3 lines 8-16] varying length requires some pointer indirection in order that all offsets are still known. It is well-known that a pointer to elsewhere in memory can be represented as a stored offset to elsewhere in a byte stream. However there appears to be no suggestion for a predecessor in the depth first numbering requiring varying length encoding in combination with the claim limitations.

3. Claim 6 (and similarly claim 17) wherein the step of serializing the byte stream comprises:

determining a correspondence between the in-memory representation and the schema tree representation;

initializing the byte stream by reserving a fixed length portion and pointing to a beginning of a variable length portion;

retrieving a location in the byte stream for an element of the in-memory representation information corresponding to a first schema leaf node in depth first order from the layout;

converting the element to bytes in the byte stream according to a number of elements corresponding to the schema leaf node; and repeating the steps of retrieving and converting for all schema leaf nodes in depth-first order. The closest prior art the examiner was able to find after constant searching was the prior art cited for claims 1 and 14, as well as the listed prior art made of record. The steps of serializing as recited in claims 6 (and similarly 17) do not appear to be taught by the cited references. In particular, limitation initializing the byte stream by reserving a fixed length portion and pointing to a beginning of a variable length portion in combination of the other recited limitations in claim 6 for the step of serializing does not appear to be disclosed in the cited references.

4. Claims 7-8 and 18-19 are objected to for depending upon claim 6.

5. Claim 9 (similarly claim 20) wherein the step of accessing information comprises the steps of: scanning a list of key values representing a table column serialized within the byte stream to determine an index position; and using the index position in conjunction with offset calculations

and offset tables serialized at the start of lists within the byte stream to find information in lists representing non-key table columns. The closest prior art the examiner was able to find after constant searching was the admitted background of the disclosure where the Background, pg. 2 lines 23-28 to page 3 line 1, utility in the messaging domain a processor should be able to scan just the key column and then randomly access just the information in it's row. Further disclosing pg. 3 lines 17-25, relational databases often store tables in column order, since this can improve scan time for key columns that lack indices. However this does not appear to be enough to suggest using the index position in conjunction with offset calculations and offset tables serialized at the start of lists within the byte stream to find information in lists representing non-key table columns in combination with all limitations in the claim.

Conclusion

The prior art made of record listed on PTO-892 and not relied, if any, upon is considered pertinent to applicant's disclosure.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Michael D. Pham whose telephone number is (571)272-3924. The examiner can normally be reached on Monday - Friday 9am - 5:00pm.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, John Cottingham can be reached on 571-272-7079. The fax phone number for the organization where this application or proceeding is assigned is 571-273-8300.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see http://pair-direct.uspto.gov. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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